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AUTHOR Schlafly, Hubert J.
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ABSTRACT

The technology necessary for the use of cable television (TV) has been invented; it simply must be put to use. By the 1970's, cable TV should be commonplace in this country. Its rapid growth was caused in part by its appearance at a time of explosive expansion of related technologies like data theory and computer design. The coaxial cable system works via a copper wire totally enclosed by a metallic shield. Different signals can be sent down the wire at the same time on different frequencies. The cable system can accommodate different kinds of carriers, like a television signal or audio, and be used for many purposes, including entertainment, education, and commercial services. Signals may also be transmitted out from the home to a central processing facility. Homes may use the cable to buy things, to notify police or firemen, or to get instructions for use of various services. The technology exists and should be used now. (JK)

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YOUR PERSONAL GENIE
IN THE CABLE

by

Hubert J. Schlafly

Presented at

THE WHITE HOUSE CONFERENCE ON AGING

Washington Hilton Hotel
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Your Personal Genie in the Cable

When I was a boy I read with wide-eyed wonderment the tales of the Arabian nights. I savored the riches of bejeweled caverns and the magical powers of Masters and Slaves conjured up in the imaginative mind of legendary story tellers. And tonight we are going to open the cover of that fascinating book once more -- to put substance on the framework of fantasy and replace a dream with a reality.

I recall a favorite story, the "Genie in the Bottle" -- the supernatural being who, in gratitude for being released from the bottle where he had been held captive, demonstrated his unusual powers for the benefit and well being of his liberator. And what were some of these unusual powers? He is instantly at your service; he could travel with the speed of light; he could collect information from distant places; he could summon materials and services without effort or travel on the part of his master; he could produce visions of remote scenes and he could allow his master to influence or participate in those scenes.

Now, let me put down that childhood dream and return to the cold, hard, flesh and blood world of fact and the serious business for which you have assembled, from all the 50 states, at this White House Conference on Aging.

Not many days ago, here in Washington, the White House Office of TeleCommunications Policy and the Federal Communications Commission may have "pulled the cork from the bottle" and by that act they may have helped to release your personal Genie.

It is my purpose here this evening, and that of the other speakers on this panel, to describe the significance of this action, to explain the nature of "cable," to explain the nature of interactive home terminals and to help you understand the importance of the services that this combination can render to you. Please keep in mind that I am speaking in terms of immediate reality -- this decade and not the 1980's or the year 2001. Nothing has to be invented; we are not waiting for a "breakthrough." It has to be implemented, not invented. But

to be implemented it must be understood and encouraged; not impeded and harassed, not regulated before it's a reality, not harnessed before it is born. The concept is well understood. Private interests are building equipment and conducting tests - now. Nineteen seventy-three appears to be the year when some large scale systems, involving the public, will be operable and by the end of the 1970's I expect we will consider this Genie as common-place.

To understand what we are talking about, let's take it a step at a time. Over the past 20 years, and for reasons not directly related to what we are considering here this evening, a new type of communications network has developed and grown in the United States. CATV, Community Antenna Television systems, were developed as a receiving service -- to bring better reception of more television broadcast stations to the people in a community. The industry grew slowly and unobtrusively, without public funds and with little attention. But as it grew, involving more and more operating systems and more and more subscribers to the service, the spotlight of government agencies, commissions, professional societies, citizens' groups, regulatory bodies, educators and particularly competitive groups in the established communications media, was focused on this expanding infant.

By today a new modern communications network which involves directly the basic unit of society -- the dwellings and homes of our people -- has taken shape. A new means, different from radio, different from the telephone, has appeared. A new tool, a new opportunity to serve, is being created. Earlier disinterest by government bodies has been replaced by a fascination coupled with an understandable protectivism of the existing order of things. Today some 2600 cable systems serve some 5 million homes and some 15 to 20 million of our people. The concept of the "Wired Nation" takes shape. And the "buzz" words now added to our vocabulary are "Broadband Communications Networks" and "Interactive Home Terminal."

The backbone of this new era is the coaxial cable -- but the meat and the nerve endings lie in a technology that has progressed farther and faster than most people know or choose to believe. The factor responsible for this rapid growth is timing. Cable communications has appeared on the scene of history at a time of explosive expansion of related technologies. Data theory, computer design, solid state circuitry, orbital vehicle control, communication theory and a vast cadre of highly skilled engineering companies and personnel ready to apply this know-how, were not created by the cable industry but have converged at a point in time ready for efficient and immediate use by the cable industry.

For a better understanding of the excitement and potential of this new communications medium you will need a better understanding of coaxial cable. It is a wire, a single copper wire which is held in the exact center of and is totally enclosed by a metallic shield. Electrical signals, similar to radio waves which pass through the air, can be carried on this wire. Being confined inside the metallic shield they do not escape into the air and thus do not cause interference with existing radio services. They can be controlled in quality, balanced in level and routed to specific places -- such as directly to the antenna terminals of the television set in your home. This cable is "broadband." That means it can simultaneously carry many, many independent signals which can be individually sorted out at your receiver, just as the radio waves are picked out of the space around us.

For a better understanding consider this analogy. Picture a multi-lane highway with all sorts of vehicles whizzing down each of these lanes. Each vehicle can select a lane and it can select a time to travel on that lane.

Different vehicles can be on the same lane at different times or they can be on different lanes at the same time -- but they may not share the same lane at the same time. On the cable, instead of the physical separation of lanes of traffic, the signals are

separated by frequency in the electromagnetic spectrum. Thus different signals can travel down this single wire at the same time, on different frequencies.

To carry the analogy further, once the multi-lane highway has been built and is capable of carrying traffic we still have the freedom of choice of what kind of vehicle to use -- a sports car, a station wagon, a bus or a trailer truck. There is still freedom of choice as to what kind of cargo that vehicle carries -- is it just a driver, a family, a baseball team or a load of school books or other merchandise. Similarly, the channel on the cable can accommodate different kinds of carriers, for example a television signal, or audio, or various kinds of data or control transmissions. And the cargo on this carrier can likewise serve different purposes -- entertainment only, education, banking information, or a vast assortment of commercial services.

Now one more analogy, we can put a divider in this highway and specify that on one side of the divider the traffic will go in one direction and on the other side go in the other direction. In some cases, instead of a divider on one highway, two highways, physically separated and distinct, carry the two-way traffic flow. Similarly a coaxial cable can have a "divider" in its frequency spectrum, except in this case it is called a "cross over filter." Frequencies above this divider can flow in one direction; frequencies below flow in the other. Or, in some cases it might be preferable to have two different cables to divide this traffic flow. The important thing is that it can be done, that it has been done, and that there are enough "broadband lanes" in the cable to allow it to be done. So not only can the cable bring into your home a variety of communications services, but it can bring from your home back to your personal Genie, your commands, desires and needs.

It may be hard to understand that this broadband cable, this single wire, simultaneously carries many many television channels. Instead of three or five or seven channels that you might be able to receive with your rooftop antenna from

local TV broadcast stations, this little 1/4" diameter "drop" cable, installed in your home by your CATV system operator, can bring you 12 or 17 or 25 TV channels. It can bring not only your local TV stations, both VHF and UHF, and possibly now one or two more distant stations, but also a whole new variety of TV signals that are not broadcast through the air and which serve much more specialized purposes -- information, education, training, neighborhood events and interests as well as local politics and issues. These additional channels are now being provided as an increasingly common industry practice. But over and above that, this very same wire will soon be equipped with additional amplifiers and terminals to provide other services involving two-way transmission capability. I will now try to describe these non-TV services in more detail.

Again let me refer to my school-days literature. I read a story about a man who observed that everyone else in the world around him at times seemed to stand still, while he had the opportunity to move among them and do productive work. Shortly he realized that the people were not standing still but that he at times had the unusual ability to do things faster than everybody else. And so while they continued at their normal pace, he suddenly had extra time during which he could accomplish his own ends.

Now this in essence is what a computer can do for you. A computer is a device that can do certain routine jobs very very quickly. So quickly in fact that the rest of the world seems to stand still while the computer performs functions which, according to the human time frame, are impossible. And so, for example, a computer can make a series of calculations in a few minutes that would normally have required an army of scientists many months to duplicate. A computer can examine information supplied from thousands of inputs and pick out and act on one individual situation among those thousands.

Now you add this ability of fast operations, each one taking only a few millionths of a second, to the electronic distribution system of the broadband cable where signals are transmitted

throughout a community at almost the speed of light and you do have your own private Genie -- you have become the "man who made time stand still."

A computer controlled, broadband cable network will serve large numbers of persons throughout a community almost simultaneously.

Each home, having its own electronic address, can be contacted by the computer and replies from that home can be returned, literally in a few millionths of a second. Thus it is not impossible that 10,000 homes could receive personalized attention in <u>one</u> second. That same contact could then be repeated, <u>every</u> second. At this speed, every home would be getting the equivalent of individual and exclusive attention, even though there may be many thousands of homes connected to the same broadband cable. And even this fantastic service requires only a tiny portion of the total cable communications capacity -- you still simultaneously are able to receive and choose from among your 12 or 17 or 25 television programs.

The Subscriber Response - Interactive Home Terminal, which is an off-shoot of the basic CATV broadband cable system, has already been implemented by actual hardware and system designs now under test. It is technologically possible; we can do these things and we have done them.

Fine -- what does that mean to you and to the other citizens of our country. First let me review:

1. We have a new two-way electronic highway now being established in our cities and our communities, with connections, hopefully, in every home in that community.

2. This electronic highway can link each of these homes with a central local processing facility in that community.

3. This high speed facility can individually, privately and repetitively address each home, and it can collect and act on responses from that home.

This interactive system inherently has great flexibility. After an individual location has been addressed it can in effect ask:

"Do you have an emergency?"

"Do you have a fire in the attic or an

intruder in the kitchen?"
"Do you have a medical emergency that needs attention?"

It can find out if your home has lost electric power or if the fuel in the oil tank is low, or the heat is off. And if such an emergency exists the computer will instantly, in a matter of seconds, recognize the problem, and automatically alert the necessary community personnel, give your name, address and identify the type of emergency that you have.

It can respond to your needs, a loaf of bread, a prescription, a purchase of some article you have seen advertised in the newspaper, or a magazine or something that has been demonstrated on your television set. This order is processed by the computer which then makes the necessary contact for delivery of the item to your home. The cost of the item will be included in your monthly cable account. You have an electronic credit card. Other services like electronic banking, stock market transactions and travel or other reservations will not be far behind.

Perhaps a yet-to-be-developed "medical vest" that you can put on in your home without paramedic or medical assistance, will automatically send back over this communications channel a "read-out" of your temperature, pulse, respiration rate, blood pressure and possibly other statistics -- on a day-by-day or even an hour-by-hour basis -- so that the computer can compare it with your previous medical record and call for assistance if it senses that there has been a significant change or negative trend.

Even the simple function where each day you press a button that says, "I'm here, I'm fine, don't worry about me" is a comforting reassurance that somewhere, somebody will know and be there to help you whenever it should be necessary.

It can instruct you by visual demonstrations on a TV channel about an exercise or therapeutic treatment -- on a business matter -- how to fill out an agency form, or apply for a benefit. And the interactive terminal will give you a chance to respond or inquire if further information is necessary.

It can leave messages for you in your home and it can collect instructions from

your home. Interactive games and skills might help while-away your leisure hours.

These are a few of many examples -- the important fact is that you have become a PARTICIPANT in a Communications System and you are not just a powerless recipient. You can make purchases without leaving your home. You can take part in community affairs, express your opinions and cast your vote. Television is no longer a spectator sport where you must watch what some person on Madison Avenue deemed to have "mass appeal."

The establishment of these services on a full nationwide basis will call for tremendous capital investment -- but well within the capabilities of our private enterprise system. But, in spite of that, I predict that the efficiencies of Broadband Communications Networks with interactive terminals will mean that the cost to you of products and services will be less than what you and the government are paying now -- and the conveniences and opportunities will be far far greater.

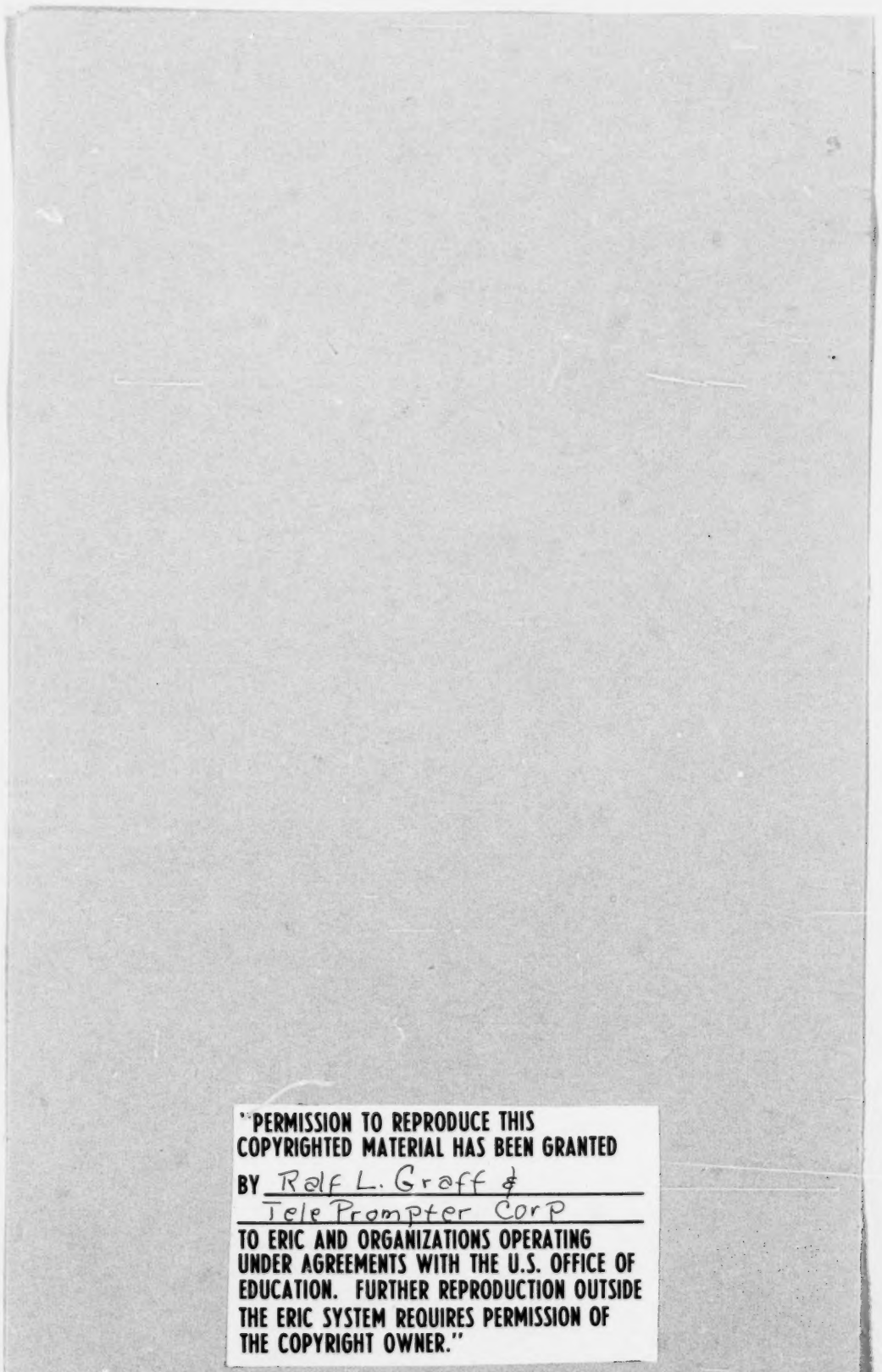
What can you do? Your local community may not know that these things are possible. Urge your local officials to become aware of this new telecommunications facility. Have them encourage its growth -- not see how many obstacles they can put in its way.

The OTP and the FCC have already provided the guidelines for growth. They are aware of the potential of Broadband Cable. They have the time, the power and the will to sense and correct such abuses that may some day need control. But if we don't let it grow to prove its potential, the good it can do will be killed off long before there are abuses to correct.

Let's all work to get your personal Genie out of the bottle and into the cable.

H. J. SCHLAFLY,
president and chief executive officer
TelePrompTer Corporation

Mr. Schlafly is an engineering graduate of Notre Dame. A founder of TelePromp-Ter Corporation, he holds numerous patents and, in recognition of his work in developing television projection equipment, is a Fellow in the Society of Motion Picture and Television Engineers. Mr. Schlafly is the creator of the Amplitude Modulated Link system, accepted by the Federal Communications Commission for distributing CATV signals by microwave as an alternative to cable. He is chairman of the Broadband Communi-cations Section of the Electronic Industries Association; a member of the Cable TV Task Force of the Institute of Electrical and Electronic Engineers, and an advisor to the National Academy of Engineers' Committee on Telecommuni-cations.



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